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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,707	07/14/2003	Hiroshi Maeda	0649-0911P	4186

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EXAMINER

TRINH, MICHAEL MANH

ART UNIT	PAPER NUMBER
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2822

DATE MAILED: 02/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/617,707

Applicant(s)

MAEDA ET AL

Examiner

Michael Trinh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) 11-49 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-10 is/are rejected.
- 7) ☒ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7-14-2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

*** This office action is in response to Applicant's election filed September 24, 2004.

Claims 1-49 are current pending, in which claims 11-49 are non-elected.

Election/Restrictions

1. Applicant's election filed September 24, 2004 with the traversal is on the grounds that "...same claims are identified for each group of inventions...". Grouping of the claims is corrected as follows:

* Group I, claims 11-16, drawn to a first solid state imaging device, classified in Class 257, subclass 704.

* Group II, claims 21-28, 34-40, 42-46, drawn to a second solid state imaging device, classified in class 257, subclass 432.

* Group III, claims 1-10, drawn to a first method comprising at least forming an external connecting terminal corresponding to the IT-CCD, classified in Class 438, subclass 75.

* Group IV, claims 17-20, drawn to a second method comprising at least forming a translucent member having a through hole filled with a conductive material, classified in Class 438, subclass 57.

* Group V, claims 29-33, 41, and 47-49, drawn to a third method comprising at least having an optical member having a condensing function, classified in Class 438, subclass 65.

It is also noted that Applicant elected Group III, drawn to a method comprising forming an external connecting terminal corresponding to the IT-CCD as recited in claim 1 and claims dependent thereon. Accordingly, claims 11-49 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. The requirement is still deemed proper and is therefore made FINAL, as grouping of the claims is corrected and identified above.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. Claims 1,2,4,5,9 are rejected under 35 U.S.C. 102(a) as being anticipated by Hata (JP-2002329850).

Hata teaches (at Figures 1-13; computer English translation at paragraphs 0015-0036) a method of manufacturing a solid-state imaging device comprising the steps of: forming a plurality of IT-CCDs 102 on a surface of a semiconductor substrate 1 (Figs 1-4, paragraphs 0015-0026); bonding a translucent member 201 to the surface of the semiconductor substrate 1 in order to have a gap opposite to each light receiving region of the IT-CCD 102 (Fig 8; paragraph 0030); forming an external connecting terminal (e.g. 1c, 222, 2) corresponding to the IT-CCD (Figs 1,4,9,13; paragraphs 0015-0034); and isolating a bonded member obtained at the bonding step and provided with the external connecting terminal for each of the IT-CCDs (Figs 1,13; paragraph 0035). Re claim 2, wherein the step of bonding a translucent member includes the steps of: preparing a translucent substrate 201 having a concave portion formed between resin 3 (Figs 7-9,1; paragraph 0016+, 0029-0030) in a position corresponding to a region in which the IT-CCD 102 is to be formed; and bonding the translucent substrate 201 to the surface of the semiconductor substrate 1 (Figs 8-9). Re claim 4, wherein at the bonding step, a gap 310 is formed between the semiconductor substrate 1 and the translucent member 201 through a spacer (including 3,221-223, etc.) provided to surround the light receiving region 102. Re claim 5, wherein the isolating step includes the step of separating the translucent member 201 to position a peripheral edge portion of the translucent member onto an inside of a peripheral edge portion of the IT-CCD in such a manner that a surface of a peripheral edge portion of the IT-CCD 102 is exposed from the translucent member 201 (Figs 1-3,13; paragraphs 0016+). Re claim 9, prior to

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said step of isolating, further comprising the step of: resin 3 shielding as a photo-curing adhesive (Figs 7-12; paragraphs 0029-0034) for shielding the translucent member 201 in vicinity of the bonding link with the surface of the semiconductor substrate 1 by a resin 3 so that the external connecting terminal is exposed.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 6-8,10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hata (JP-2002329850) taken with Kyle (5,641,713).

Hata teaches (at Figures 1-13; computer English translation at paragraphs 0015-0036) a method of manufacturing a solid-state imaging device as applied to claims 1,2,4,5,9 above, wherein resin 3 is a photo-curing adhesive for bonding the translucent member 201 with the surface of the semiconductor substrate 1 by ultraviolet (UV) irradiation (Figs 8-9; paragraphs 0029-0030, re claim 8).

Hata lacks performing the resin adhesive bonding and shielding at a temperature under 80 degrees C (re claims 6 and 10), and bonding at room temperature as recited in claim 7.

However, Kyle teaches (at Figures 3B-3C) bonding a covering member 10 to a substrate 36 by utilizing an adhesive resin 26 for bonding (col 5, lines 15-50), wherein epoxy resin 26 for

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bonding is preferably a type cured by the application of ultraviolet (UV) light at room temperature, which room temperature is under 80 degrees C.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to bond the translucent member to a surface of the semiconductor substrate of Hata by using the epoxy adhesive resin type cured by the application of ultraviolet (UV) light at room temperature, which room temperature is under 80 degrees C, as taught by Kyle. This is because of the desirability to perform the bonding at low temperature (e.g. room temperature) so that damaging to the translucent member and optical element thereon can be effectively avoided.

Allowable Subject Matter

6. Claim 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims


The following is a statement of reasons for the indication of allowable subject matter: The references of record, alone or in combination, do not fairly anticipatively disclose each and every aspect of the claimed method of manufacturing a solid-state imaging device, or fairly make a prima facie obvious case of the claimed method, in combination with other processing claimed limitations as recited in base claim 1, the further inclusion of selectively removing the surface of the semiconductor substrate to surround the light receiving region, thereby forming a protruded portion, a gap being formed between the light receiving region and the translucent member by the protruded portion.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael M. Trinh whose telephone number is (571) 272-1847. The examiner can normally be reached on M-F: 8:30 Am to 5:00 Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on (571) 272-1852. The fax phone number is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application should be directed to the receptionist whose telephone number is (703) 308-0956.

Oacs-15


Michael Trinh
Primary Examiner